



# EVIDENCE FOR IMPROVEMENT:

An Integrated Analytic Approach for  
Supporting Networks in Education



**Carnegie Foundation**  
for the Advancement of Teaching

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## ABSTRACT

Across the social sectors, a growing number of organizations are embracing continuous improvement approaches and organizing themselves as networks in order to attack complex problems. To succeed, networks must learn quickly by studying their own practices, continuously adapting to changing circumstances within their organizations and in the broader environment, and incorporating this learning into their ongoing work. In this paper, we describe an integrated approach—which we call Evidence for Improvement (EFI)—that explains how a variety of tools and practices drawn from diverse forms of program evaluation can inform the leaders of these networks in advancing productive change. We propose that improvement networks can be conceptualized and measured using a three-level nested model composed of a working theory of improvement, an improvement enterprise, and environmental contexts.

As they engage in inquiry targeted at each level, those with evaluative expertise should become authentic partners with improvement leaders and fully align their analytic efforts with the improvement activities and social contexts of the network. The EFI approach we describe is designed to enhance a network's internal learning processes and, in turn, lead to more positive impacts for educators and students. It has implications for improvement practitioners, evaluators, and funders.



# INTRODUCTION

Across the social sectors, a growing number of organizations are embracing continuous improvement approaches to attack complex problems. Calls for continuous improvement in education appear throughout the Every Student Succeeds Act (ESSA), and prominent philanthropies have pledged to support improvement networks that use local data to drive positive change in important outcomes.<sup>1</sup> These developments suggest that an increasing number of social initiatives will be using improvement methodologies and organizing themselves as networks, which means they will also be facing the challenges that come with these efforts.

Indeed, teams in charge of improvement networks often must, for example, manage the development of multi-level intervention systems; support a community of diverse, often geographically dispersed educators; and navigate a turbulent policy and funding environment, among other core tasks.<sup>2</sup> Such conditions require networks to learn quickly by studying their

own practices, continuously adapting to changing circumstances within their organizations and in the broader environment, and incorporating this learning into their ongoing work.<sup>3</sup>

## **THIS PAPER IN CONTEXT**

This document offers an integrated perspective on how a variety of tools and practices, drawn from diverse forms of program evaluation, can help to inform the leaders of these networks in advancing productive change. We expand on an emerging literature that has begun to explore how evaluation and continuous improvement methods can be brought together productively.<sup>4</sup>

**Evaluators bring expertise in gathering, interpreting, and supporting the use of evidence, which is central to vitalizing continuous improvement.**

Many of the tools, techniques, and practices developed within the field of program evaluation can help network leadership teams as they learn to improve.<sup>5</sup> A long tradition of scholarship has explored how evaluators can help educational organizations develop their interventions and theories of impact, test and refine their approaches, and assess the extent to which they are achieving their long-term goals. In addition, evaluators bring expertise in gathering, interpreting, and supporting the use of evidence, which is central to vitalizing continuous improvement. However, we also recognize that evaluation can be experienced by those engaged in innovation and improvement work as counterproductive to their efforts.<sup>6</sup> This divide can be bridged when those with evaluative expertise become authentic partners with improvement leaders and fully align their analytic efforts with the improvement activities and social contexts of the network.

Conceived and enacted in this fashion, evaluation becomes a servant to improvement efforts. This approach has the potential of enhancing a network's internal learning processes that in turn lead to a greater likelihood of positive impact. It also provides capacity to generate over time a base of practical knowledge for improvement relevant to education more generally.

This paper starts by introducing improvement networks and a conceptual framework highlighting key dimensions of their work. Then it describes an integrated perspective on informing improvement that combines approaches from various evaluation methods. We introduce the term “analytic partner” as a way to describe the work that individuals or groups undertake as they engage with network leaders in enacting this integrated approach. We explain the challenges that leaders of improvement networks face and how analytic partners might structure their roles accordingly. This leads, in turn, to a discussion of the knowledge, skills, and dispositions that may be especially important for analytic partners. We draw on our direct experiences working with improvement networks, existing writing in the evaluation field,<sup>7</sup> and the advice and opinions of prominent evaluators and scholars who study the use of evidence and joined in this inquiry with us.

# WHAT ARE IMPROVEMENT NETWORKS?

Improvement networks are becoming increasingly popular in education and are seen as a high-leverage strategy to solve previously intractable problems.<sup>8</sup> Educational innovators recognize the need to organize these networks as broad coalitions of diverse actors.<sup>9</sup> These coalitions can take various forms, such as Networked Improvement Communities, Collective Impact Networks, or Aligned Action Networks.<sup>10</sup> Many research practice partnerships (RPPs) have emerged in this area as well.<sup>11</sup>

## IMPROVEMENT NETWORKS IN ACTION

Two characteristics distinguish improvement networks. First, participants commit to advancing a shared goal. Unlike other educational networks—such as sharing networks or communities of practice—improvement networks are communities of common accomplishment that come together to make measurable progress on a valued outcome.<sup>12</sup> Second, as they seek to progress, improvement networks

take a “learn as you go” orientation. That is, instead of beginning their work with a rigid commitment to a pre-defined program design or set of practices, improvement networks expect to study their problem, experiment with potential solutions, and continuously refine their interventions.<sup>13, i</sup>

Improvement networks aim to develop over time a robust body of evidence necessary to achieve better outcomes across varied contexts and student populations.<sup>14</sup> As network’s mature and their span of influence expands, interventions may become more adaptive in seeking to respond to diverse local conditions.<sup>15</sup> Researchers have referred to this network process as developing capacity for adaptive integration.<sup>16, ii</sup>

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- i This same spirit is shared by efforts advanced under the umbrella of Design Based Implementation Research. Source: Penuel, W.R., Fishman, B.J., Cheng, B., & Sabelli, N. (2011). Organizing research and development at the intersection of learning, implementation, and design. *Educational Researcher*, 40(7), 331–337. .
  - ii A similar argument exists in implementation science in which many social interventions are intrinsically interactive in character and must integrate productively with local contexts to achieve their goals. Source: Fixsen, D.L., Blase, K.A., & Fixsen, A.A.M. (2017). Scaling Effective Innovations. *Criminology and Public Policy*, 16(2), 487–499. <https://doi.org/10.1111/1745-9133.12288>.

## THE THREE-LEVEL NESTED MODEL

As a consequence of this adaptive, learning orientation, improvement networks have distinct knowledge needs that evolve over time. Early on, a network's ideas about how to improve are often tentative. During this phase, networks may draw on existing scholarship, the insights of their members, and locally conducted inquiries to develop a **working theory of improvement**. However, in the beginning, this theory is provisional. Over time, networks develop their own internal analytics and data infrastructure to refine this working theory and test their conjectures about improvement across a variety of settings.

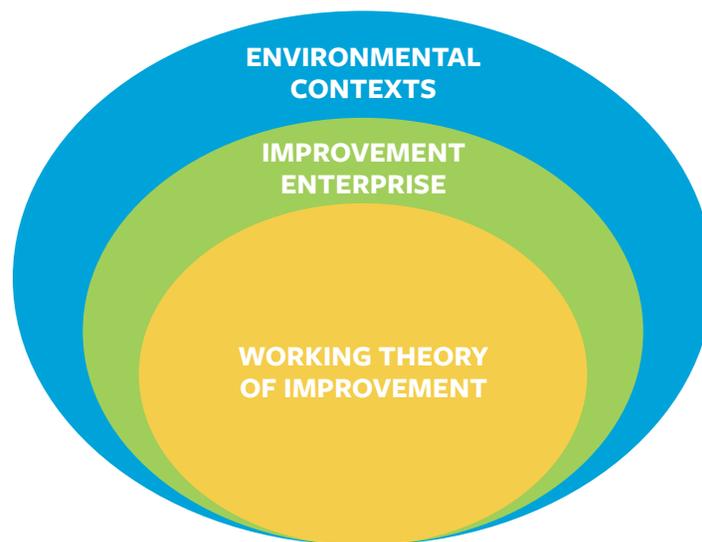
Accompanying these efforts, networks will simultaneously engage in two parallel streams of activity. In the first of these, networks attempt to foster a cohesive, collaborative learning community and manage the social dynamics of their members toward this end. This collection of people, organizations,

and their work as an improvement network forms the **improvement enterprise**, and supporting the enterprise and organizing its efforts is essential for accomplishing a network's aims. On the second track, networks seek to navigate their **environmental contexts**—the often complicated financial, political, and organizational dynamics in which they are embedded—which can be highly consequential for a network's success, its sustainability over time, and the scalability of the interventions that evolve within it.

Figure 1 offers a visualization of the nested relationship among these core network activities. The working theory of improvement is developed and enacted by an improvement enterprise, which, in turn, operates in particular environmental contexts. Like many frameworks, this three-level nested model does not attempt to be comprehensive. Instead it highlights a key set of concepts and serves as a resource for thinking and reasoning about the work of improvement networks.

**Figure 1: The Three-Level Nested Model of Improvement Networks**

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# IDENTIFYING EVIDENCE FOR IMPROVEMENT

We searched existing literature for ways in which evidence could be employed to help networks iterate on their theories of improvement, manage their enterprises, and navigate their contexts, and found considerable work to draw upon. However, only by bringing together multiple inquiry traditions—developmental,<sup>17</sup> formative,<sup>18</sup> and summative evaluation<sup>19</sup>— could these three domains of activity be fully addressed. In addition to these core evaluative approaches, other types of analytic activity that can enhance the work of improvement networks include design thinking,<sup>20</sup> systems thinking,<sup>21</sup> improvement science,<sup>22</sup> and direct analytic capacity building.

These various techniques can be joined together in an integrated analytic approach to supporting improvement networks that generates useable **Evidence for Improvement (EFI)**. We refer to those who use these techniques as **analytic partners** to improvement network leaders—a term that is

shorthand for a broad ensemble of core analytic functions, relationships, and organizational capacities needed to inform improvement. We use the term *partner* instead of *evaluator* so as to better signal the deeply collaborative and goal-aligned relationship of analysts informing practicing improvers. In many instances, this relationship may be more complex and varied than a single partner, but the term offers simplicity in communication.

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In what follows, we leverage our three-level nested model of improvement networks to elaborate key analytic needs of improvement networks and describe techniques and approaches that analytic partners may use to meet them.

## DEVELOPING AND ITERATING ON A WORKING THEORY OF IMPROVEMENT

The **working theory of improvement** at the center of the three-level model represents a network's best current ideas of how to accomplish its aims and the concrete interventions derived from these ideas. The theory is meant to guide and structure a network's thinking as it makes practical improvements.

Importantly, as noted earlier, theories of improvement are provisional early on, so they undergo continuous adaptation and refinement as evidence is gathered from cycles of change. The development, refinement, and elaboration of an improvement theory occur iteratively and in a non-linear fashion. However, for the purposes of simplicity in explanation, we discuss these processes as occurring in two phases: (1) exploration and (2) testing and adaptation.

### EXPLORATION

Improvement networks commonly target complex, multifaceted social problems that lack a known solution.<sup>23</sup> Under these conditions, it can be counterproductive to become too attached to specific change ideas early on. Instead, an improvement network will often study its problem, engage the users that encounter the problem at ground-level, conduct a thorough investigation of the larger system

factors that influence network activities, and consult scholarly research on the topic. This inquiry process helps networks develop initial ideas about how to make progress.<sup>24</sup>

Several inquiry approaches are a particularly good fit for improvement networks in their exploratory work. First, **developmental evaluation** offers an orientation and some useful tools and methods that are ideally suited to helping networks as they search for and iterate on their early ideas. Developmental evaluation is meant to help innovators tackle social problems in complex, unpredictable environments.<sup>25</sup> Its name comes from the fact that it is designed to inform the development of social innovations<sup>26</sup> in which development refers to deep, substantial changes to an intervention, rather than tweaks or minor revisions.<sup>27</sup> Developmental evaluation positions evaluators as authentic collaborators, often embedding them as members of a project team. The developmental evaluator's task is to serve as a "critical friend" by bringing evidence to bear that can help innovators rethink their work as they are in the process of doing it. Among other features, developmental evaluation emphasizes the importance of (1) close working relationships between evaluators and practitioners,

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**Without taking a systems lens, improvement networks might overlook key dynamics that will inhibit or benefit their efforts.**

(2) shared input into the design of the evaluation, and  
(3) rapid feedback.<sup>28</sup>

Building on this developmental evaluation orientation, a more specific set of inquiry techniques often prove especially valuable for networks as they develop their working theory of improvement. First, techniques taken from the field of **design research**<sup>29</sup>—which emphasize understanding the experiences of individuals who are closest to the problem and engaging a broad set of stakeholders in the design process—may be especially valuable for networks as they probe their understandings about the specific problem they are addressing. During this phase, members of an improvement network might interview frontline workers, such as teachers, principals, or students, to understand their challenges. In addition to these “empathy” interviews, network members may create maps that precisely represent the steps in a key process or engage in other forms of qualitative study. Such work helps in the design of interventions that are truly appropriate for their contexts, and helps to avoid “solutionitis”—the common tendency to implement the next silver bullet in education without assessing the extent to which that idea is truly appropriate and effective.<sup>30</sup>

In addition to techniques from design research, analytic partners can support their networks in this stage by using tools from a **systems thinking** approach.<sup>31</sup> These tools (e.g., system maps, stock and flow diagrams) are designed to help users develop a broader lens so that they can see how previously unknown factors might influence their work. In the context of education, these factors might include state and district policies that hinder or facilitate the work of a network, or other educational programs that may interact with a network’s plans.<sup>32</sup> Without taking a systems lens, improvement networks might overlook key dynamics that will inhibit or benefit their efforts.<sup>33</sup>

Finally, the central goal of the exploration phase aligns well with guidance found in the practice of **theory-based summative evaluation**.<sup>34</sup> This evaluative strategy emphasizes the development of a conceptual model that represents the causal linkages between activities and intended outcomes of an intervention, the creation of indicators and measures tied to that model, and the explicit and systematic testing of those linkages. Similar theory development objectives can be seen in improvement networks around the use of tools such as conjecture maps<sup>35</sup> and driver diagrams.<sup>36</sup>

## TESTING AND ADAPTATION

Over time, the needs of improvement networks change. Improvement practitioners seek to test elements of their initial working theories of improvement to refine their change ideas. Through this work, which will often begin in a single or small number of sites, practitioners will seek to learn whether some emergent form of the intervention can in fact be taken up, implemented well, and generate some evidence about efficacy. In simple terms, the goal is to determine *Can we get this to work somewhere?*

**An initial demonstration of efficacy is an important first step toward the larger overarching aim of developing a set of interventions with demonstrated effectiveness across diverse contexts.**

At this point, evidence on this question may be largely qualitative in form. Regardless, an initial demonstration of efficacy is an important first step toward the larger overarching aim of developing a set of interventions with demonstrated effectiveness across diverse contexts.<sup>37</sup>

Once initial evidence of progress has emerged in one or a small number of places, networks seek to spread these interventions more widely. Key tasks for improvement networks in this stage are: (1) supporting frontline workers as they conduct further testing of change ideas and document these processes to create useable knowledge for the network as a whole; (2) building a system of practical measures attached to the core elements of their working theory because, as efforts expand in scale, more formalized methods become essential for learning from the work; and (3) assessing more explicitly the hypothesized links between activities and outcomes in order to drive further revisions to their improvement efforts.<sup>38</sup>

The EFI approach combines several inquiry techniques that can help improvement networks as they refine and seek to validate their practices. Analytic partners may benefit from drawing on methods found in both

formative and summative evaluation models.<sup>39, i</sup> Formative evaluation focuses on (1) understanding how an intervention is enacted in practice, (2) learning from the challenges and successes of that enactment, and (3) making appropriate changes to the design of that intervention or the way its implementation is supported.<sup>40</sup> What is key here is that the analytic partner “treats variation in implementation not as a mediating variable but as a crucial source of information.”<sup>41</sup> This formative perspective also highlights the fact that variation in performance is the natural state of affairs. Understanding the sources of this variation is key to advancing the effective adaptations that may be necessary to assure quality outcomes occur reliably as the initiative spreads.<sup>42</sup>

While formative evaluation is intended to help designers make significant adjustments to their interventions, summative evaluation is designed to assess the impact of those interventions. It directs networks to examine the hypothesized connections between the practices they advocate for and the outcomes they target.<sup>43</sup> In general, summative evaluation (sometimes called impact evaluation) assesses how well an intervention accomplishes its stated goals; it is an assessment of the efficacy of the intervention and its impact on the people who took part in it.

It is important to recognize that the interventions being developed by improvement networks are typically neither simple nor discrete. Researchers have noted that much of the writings on evaluation assume

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i Evaluation is a broad field that includes diverse approaches not discussed in this document. For the purposes of argument, we characterize formative, summative, and developmental evaluation as distinct approaches while fully recognizing that in practice they may overlap with each other and with other evaluation models.

that the intervention has an “atom-based” character.<sup>44</sup> Basically, the intervention is discrete and well specified and can be introduced to most any context with little demands on participants for individual learning and organizational change: It can literally just be “added in.” In contrast, most educational and social interventions have a more interactive relationship with local context. Network members make adaptations to their interventions based on particularities of context, and these adaptations may become more numerous as a network scales. On balance, some adaptations will be more effective than others in particular settings. So, learning from this variation in performance is an essential task of an analytic partner.

This interactive and variable character of interventions demands a transformation of the traditional summative evaluation question *Does it work?* While the summing up of the evidence from an improvement network remains an important issue, the summative question now becomes *What works, for whom, and under what conditions?* To the point, a growing body of evidence indicates that most interventions have highly variable effects in which they work well in some places and not at all in others.<sup>45</sup> Researchers report that the standard deviation in the size of an intervention’s effects may often be as large, and sometimes even larger, than the average effect. Moreover, there is evidence that these study findings may underestimate the propensity for null effects that would occur should the interventions scale more broadly.<sup>46</sup>

Consequently, in the testing phase, the efforts of the network must be viewed as a set of interventions, being adapted in varied contexts, with differing levels of effectiveness likely to occur. Learning about the contours of this variation and the factors driving it,

**The analytic partner needs to figure out, within the context of a given improvement network, some practical ongoing way to generate credible and useable evidence, context by context and for different sub-groups of students, so that the network’s progress toward its measurable aims can be captured.**

as opposed to creating a single number indicator of network effectiveness, is the summing up task for the analytic partner. Network leaders need regular feedback about *What is working and what is not, and where and for whom?* This knowledge is the fuel for the next round of continuous improvement.

Therefore, the analytic partner needs to figure out, within the context of a given improvement network, some practical ongoing way to generate credible and useable evidence, context by context and for different sub-groups of students, so that the network’s progress toward its measurable aims can be captured. The design for generating such summative evidence may take different forms in different networks, which will require of the analytic partner creative blending of pragmatic and opportunistic thinking. The data design may be based on comparing baseline results in each site (i.e., historical outcomes) to subsequent changes over time—the core mechanism used, for example, in most process improvement studies.

**The mechanisms put in place for the summing up of evidence must be dynamic like the core work of improvement itself.**

Alternatively, it might involve local matching of students and sites to form a comparison group,<sup>47</sup> or it may draw on statistical methods such as value-added strategies or propensity score analytics to create the comparison. In some cases, local randomized experiments may actually be possible. Lottery studies on the effects of individual charter schools are an example.<sup>48</sup>

Whatever choice is made, in the context of continuous improvement, summative evaluation is not meant to be a design used for a one-time study. The efficacy of a network's efforts and the contours in its variation will change over time. Consequently, the mechanisms put in place for the summing up of evidence must be dynamic like the core work of improvement itself.

In sum, though tools drawn from formative and summative evaluation play a central role for networks in the “testing and adaptation” phase of their work, the conceptual frames from both developmental and theory-based evaluation remain central as well. Aligning with the underlying ethos of continuous improvement, the EFI framework is about learning as you go. It is an inquiry perspective that informs practitioners as they try things out and constantly pays attention to results, including variation in and driving

factors of outcomes, and in the accrual of evidence to guide further cycles of testing and revision.<sup>49</sup>

## **BUILDING CAPACITY FOR INQUIRY**

In addition, embedding evaluative thinking and methods into the direct work of network participants can enhance their capacity to learn rapidly from their own efforts.<sup>50</sup> Thus, another important role for an analytic partner in vitalizing a network's learning about its own efforts is through **building the capacity** of network members to engage in systematic inquiry about their own work. In this regard, analytic partners may train and coach network members directly engaged in improvement work. In these efforts, analytic partners could focus on three broad forms of direct capacity building.

First, analytic partners could help network members learn about and use the tools of **improvement science** that are designed to help practitioners test and document their practices in order to refine them and improve.<sup>51</sup> Improvement science, for example, emphasizes the use of plan-do-study-act (PDSA) cycles, an adapted version of the scientific method designed for frontline workers. PDSAs can help practitioners systematically study their own practices

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and make targeted refinements to these practices based on their inquiry.

Second, improvement science also urges practitioners to develop a **system of measures** to track how their interventions actually operate in the field and to provide the necessary data resources to continually assess the causal linkages assumed in the network's working theory of improvement.<sup>52</sup> The guiding spirit of improvement is "definitely incomplete and possibly wrong." Regularly examining evidence from a system of measures is critical to enlivening this mantra. By supporting network members in the use of improvement science tools, analytic partners can enhance the rigor with which the network studies its own practices, builds a body of evidence around their use, and makes informed decisions about how to adjust its work.

While such a system of measures, once produced, may appear relatively straightforward, the design,

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testing, and refinement of the measurement system is a complex technical task. It requires a blending of content knowledge about the problem-solution space; a knowledge of local contexts coupled to an engineering orientation to make the measures practical, light, and lean; and statistical acumen to examine and refine the predictive validity of the overall measurement system. Few, if any, school- or district-based educators will have the capacity to guide this work on their own. This is a specific instance in which the technical skills of an analytic partner come to the fore amid the broad contours of expertise needed to vitalize improvement networks.<sup>53</sup>

Third, analytic partners can also directly enhance the capacity of networks to engage in systematic inquiry by helping them build **analytic infrastructure**.<sup>54</sup> Based on experience coaching and supporting educational improvement networks, we have learned that these networks often face challenges developing the routines, roles, and tools required to efficiently gather, manage, analyze, and interpret data. Many educators receive only minimal training in collecting data systematically and analyzing results. As a consequence, improvement network leaders often need guidance on how to undertake these activities, which are essential to testing changes in continuous improvement. Analytic partners can help networks develop greater capacities related to data infrastructure in a variety of ways. For example, they might help networks develop efficient social routines for gathering and analyzing data, advise networks on how to recruit and train appropriate analytic personnel, or recommend technological systems for the storage, analysis, and presentation of data.

## ESTABLISHING AND MANAGING AN IMPROVEMENT ENTERPRISE

The second level of our three-level model focuses on the **improvement enterprise**—the group of people and organizations that make up an improvement network. Improvement enterprises typically include a diverse set of members that help the network leverage varied knowledge pools, accelerate its collective learning, and broaden its impact.<sup>55</sup> Improvement networks often cross organizational boundaries (e.g., school districts, schools) and bring together practitioners who do not typically have the opportunity to regularly interact with one another. Research tells us that such networks have tremendous potential to accelerate learning and foster innovation.<sup>56</sup> However, at the same time, their relatively loose authority structure and dispersed nature can make coordination difficult. In order to promote coherent collective action, networks typically have some form of leadership or hub structure, along with a central group convening, communicating with, supporting, and orchestrating the learning of other members.

Leaders charged with managing and nurturing the improvement enterprise face a complex challenge. They must (1) identify and recruit new members, (2) help to establish and maintain collaborative norms, (3) design and execute meetings and convenings in which the network comes together, and (4) promote the development of social connections and trust among network members. At the same time, they are asked to facilitate the collective learning of the network by (1) sharing the insights that emerge from the work of individual members and smaller teams, (2) drawing in external knowledge from research and scholarship as needed, and (3) modeling and promoting a learning culture in which risk taking and experimentation feels

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safe. All the while, network leaders need to keep their members focused on the ultimate goal of improving outcomes in their individual workplaces and across the entire network.<sup>57</sup>

Given the complicated social structure of improvement networks and the challenge of leading this type of organization, analytic partners can provide considerable value by generating evidence on network dynamics and reporting what they observe to a network's leadership team. As network leaders balance the need to set direction, keep the community engaged and energized, and manage members' learning, they may value assistance sensing problematic developments within their enterprise and responding

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accordingly. Analytic partners with an EFI orientation may, for example, explicitly map the emerging patterns of social interaction developing in the network through social network analysis (SNA).<sup>58</sup> This can help leaders to identify problematic social disconnects among their members, such as a lack of social ties between sites within the network, and provide targeted supports to create those connections, among other uses. In addition to SNA, analytic partners might also conduct climate surveys or observe network meetings as a means of assessing the learning and engagement of network members. This type of organizational analysis serves as a source of systematic feedback that can assist managers to better understand the operational dynamics of their enterprise.

For example, the Carnegie Foundation for the Advancement of Teaching, in partnership with colleagues at the University of Pittsburgh, has developed an initial network health framework,<sup>59</sup> a matching survey, and a set of fieldwork protocols. This framework identifies the key features of an improvement network, articulates the relationships among these features, and identifies measures that can assess them. It focuses on network culture, collaborative activity, and members' perceptions of learning opportunities, among other features, by generating information tied to the framework, sharing it with network leadership teams, and providing opportunities for sense making and interpretation. These efforts have helped identify challenging aspects of network development and informed network leaders efforts to target areas for improvement within their enterprise.<sup>60</sup> In general, improvement networks aspire to develop and sustain a broad base of social learning across participants and contexts around the

goal of solving a shared problem. The work of analytic partners with the improvement enterprise seeks to inform network leaders' efforts to initiate and sustain these interactions.

## **OPERATING IN COMPLEX ENVIRONMENTS**

The third level of our conceptual model is the **environmental context**—the larger economic, political, and sociocultural settings in which improvement efforts are embedded. Networks come into specific contact with these forces as they introduce and adapt their interventions to the particularities of local contexts. These environmental influences also operate more broadly, including, for example, how networks seek out funding, align their efforts with the policies and standard operating procedures of existing organizations, and attend to leadership support especially in times of senior leadership transition. To make matters more complex, networks commonly

**Improvement networks aspire to develop and sustain a broad base of social learning across participants and contexts around the goal of solving a shared problem. The work of analytic partners with the improvement enterprise seeks to inform network leaders' efforts to initiate and sustain these interactions.**

**The work of establishing and managing the interface between networks and their environments requires that network leaders enact and interpret environmental dynamics and make decisions about selectively bridging and buffering environmental influences.**

include members from various different organizations (e.g., different school districts), which requires networks to interact with not one but many different local contexts. Indeed, researchers have argued that it is environments (and not activities within networks) that most often undermine improvement activities within networks and weaken their viability.<sup>61</sup> Moreover, these network dynamics become more complex—and more challenging—in contexts that have the greatest need and potential to benefit from network-based improvement: low performing schools in turbulent urban district and policy environments.

Consequently, the work of establishing and managing the interface between networks and their environments becomes as important as managing activity within networks, requiring that network leaders enact and interpret environmental dynamics and make decisions about selectively bridging and buffering environmental influences.<sup>62</sup> Important

aspects of networks' environmental context include: (1) the community (or communities) in which network initiatives seek to operate, (2) the research field that is relevant to the network's domain of practice, (3) the policy arenas to which the network must attend, and (4) shifting funding priorities among governments and philanthropies.

Analytic partners might help network leaders negotiate these environmental factors in several ways. First, they might help leaders **build greater awareness** that environmental factors matter. Network leaders may not be able to fully attend to how environmental factors influence their work as the demands of operating their organization and/or supporting the successful enactment of their change ideas are naturally privileged. Second, analytic partners might help network leader's **map and monitor** important elements of their environmental context. Systems mapping<sup>63</sup> or other forms of environmental scanning<sup>64</sup> may be particularly useful for helping networks identify the actors in the environment upon which they depend and interrogate the nature of those dependencies. Finally, analytic partners might help network leaders strategically **manage their relationships with external actors** by buffering their influence,<sup>65</sup> building connections, or trying to actively intervene in order to shape their context.<sup>66</sup>

## **SCALING WITHIN COMPLEX ENVIRONMENTS**

Environmental considerations become especially germane as networks seek to scale their efforts beyond initial testing and co-development roles. Several considerations shape network efforts in this regard. First, successfully scaling requires networks

**Successful implementation within any given context is more likely if networks ensure the organizations within which they operate (i.e., states, districts) have policies and practices that are compatible with the network's change ideas.**

to consider demand-side diffusion strategies, such as ensuring their interventions are easily understood, perceived to be advantageous, and favored by local opinion leaders.<sup>67</sup> Second, successful implementation within any given context is more likely if networks ensure the organizations within which they operate (i.e., states, districts) have policies and practices that are compatible with the network's change ideas. Finally, as networks seek to grow and sustain their efforts, they often must cultivate new funding opportunities while simultaneously working to maintain their current sources.<sup>68</sup> Each new funding source may add additional constraints and/or directions for the work going forward.

Spreading a complex change effort while maintaining the integrity of its core practices is especially challenging for networks. As an intervention becomes increasingly popular, it may be taken up rapidly but often only in a surface-level fashion.<sup>69</sup> The time and processes for deep learning among participants about the

intervention, which was part of the early stage testing and development, may receive short shrift. Coupled with the various environmental forces previously mentioned, local implementations will likely be quite variable. For all of these reasons and more, the analytic partner should begin with the assumption that, as the intervention moves out over time into other contexts, local actors will change it. Learning from these sources of variation becomes another key objective for the analytic partner. Many adaptations will likely be maladaptations, but some might be genuine improvements. The network's learning goal over time is to continue to reshape the overall distribution of outcomes observed—truncating the more negative consequences and gradually moving the overall center of gravity in a more positive direction. This requires ongoing attention to the changes occurring to the intervention and to the variation in outcomes resulting—here again core work for the analytic partner.

In sum, the information gained by engaging with a partner not directly involved in the work is likely to be highly valuable in helping improvement leaders monitor, interpret, and adapt to environmental factors in ways that both sustain the enterprise and support the scalability of outcomes. In the same way a marketing department supports commercial firms in reacting to market trends, an analytic partner may help an improvement enterprise respond better to nuances of context as well as to changes in their policy, funding, and regulatory environments.

Table 1 summarizes the needs of improvement networks and the matching types of analytic support that analytic partners could provide.

**Table 1: How Could Analytic Partners Meet the Needs of Improvement Networks?**

	Improvement networks seek to ...	So they need help ...
WORKING THEORY OF IMPROVEMENT	Explore new practices, iterate on early change ideas, and develop reliably effective interventions in their context.	Analyzing their efforts through a developmental, formative, and summative lens.
	Avoid solutionitis by deeply studying their problem and the system factors that produce it.	Understanding the true needs of their users and taking a systems view of the problem.
	Systematically study and iterate on their interventions through disciplined inquiry.	Building their own capacity to use improvement science and developing an infrastructure that allows them to efficiently analyze data.
IMPROVEMENT ENTERPRISE	Manage social dynamics across network members in different contexts.	Understanding the nature of participation, engagement, and social learning occurring across the network.
	Accelerate social learning across the network.	Resourcing technical research expertise, consolidating learning within the network, and creating mechanisms for more rapid diffusion of emergent knowledge network-wide.
ENVIRONMENTAL CONTEXTS	Operate in complex environments.	Sensing salient dynamics within their communities, their policy environment, relevant fields of academic research, and the funding environment.
	Learn from variation in the adaptations and performance of the intervention across contexts.	Analyzing local adaptations made to interventions, understanding why these are occurring, and analyzing effects of the interventions across different settings.

# HOW COULD ANALYTIC PARTNERS SUPPORT A NETWORK'S LEADERSHIP TEAM?

The preceding section posits that the evolving knowledge needs of improvement networks necessitate an integrated approach to analytic support that includes techniques from various inquiry traditions. However, research on knowledge utilization has shown that the social conditions surrounding the use of evidence are just as important as the evidence itself when the goal is to promote substantive interpretation and action.<sup>70</sup> With that in mind, the next item for consideration is how analytic partners might define their roles and structure their partnership with network leaders in order to promote deep engagement in evidence for improvement.

## **NETWORK LEADERSHIP TEAMS**

Next, we consider how an analytic support aligned to the working conditions of **network leadership teams** may be productively designed to enhance the social learning of the network. Network leaders may have difficulty keeping track of the many factors that influence their efforts (such as those introduced in

the three-level nested model). They will also likely experience confirmation bias—a tendency to interpret phenomenon in a way that confirms their pre-existing beliefs.<sup>71</sup> Given these realities, analytic partners can provide an essential balancing function. They can offer a disciplined yet supportive perspective that helps network leaders interrogate their own ideas about the activities occurring in their network. In particular, three key working conditions of network leadership teams may make it especially challenging for leaders to

**Analytic partners can offer a disciplined yet supportive perspective that helps network leaders interrogate their own ideas about the activities occurring in their network.**

engage in deliberate and intentional decision-making: (1) the need to constantly and rapidly learn from practice; (2) the intense day-to-day demands of their work; and (3) the inherent risk, uncertainty, and vulnerability of working in an improvement context. These conditions, in turn, highlight the value of an analytic partner whose primary role is informing the work rather than doing (or managing) it.

## **THE NEED FOR CONSTANT, RAPID LEARNING**

The contexts in which many educational improvement networks seek to intervene, such as schools and districts, are beset by notoriously complex and multifaceted problems.<sup>72</sup> In these conditions, networks strive to learn from their initial attempts at change, adapt their work as they go, and continuously improve. Researchers have called this feature of network leadership the “learning imperative,” which has at least two key qualities: (1) it is constant and ongoing, and (2) it requires the ability to rapidly access and respond to incoming data and evidence.<sup>73</sup>

With these two demands on network leaders’ learning needs in mind, an analytic partner should be readily available for consultation and discussion. This would require the embedding of an analytic partner as a full member of the leadership team so as to maximize their availability, knowledge of the context, and investment in the improvement effort. What is most important is that they are in constant communication with network leaders and thus positioned to help the network identify relevant information and draw attention to new evidence as it becomes available.

We recognize that, for many traditionally trained researchers and evaluators, acting as a full member

of an initiative’s leadership team may appear to be challenging. After all, many evaluators have been trained to be independent, to act at some arms-length distance from the intervention, and to see their efforts as accountable to external authorities (e.g., funders) who seek an impartial report about the intervention’s implementation and effectiveness. However, to best help networks improve, an analytic partner’s first priority should be to support the learning of network members. Consequently, for evaluators to maximize their contribution to this goal means they must challenge the more traditional stance of an evaluator as an external and disinterested actor. In fact, the core value of an analytic partner is their proximity to the improvement activity.

Taking on this role, however, does not mean abandoning disciplined inquiry or failing to bring rigorous empirical evidence to bear. In fact, it is precisely this set of skills and orientation that makes the analytic partner of great value to the improvement network. That is, as network leaders aspire to advance on the aims they have espoused, analytic partners bring forward evidence that network leaders need to know and attend to so that they can continue to move their enterprise forward. In addition, if the work of the analytic partner is well carried out, a comprehensive evidence base will develop that is capable of answering most any question raised by external audiences.

**The core value of an analytic partner is their proximity to the improvement activity.**

If more assurance is needed, an external “analytic audit” of these records (see Appendix) can be commissioned. Such an audit might work in ways analogous to how a corporation’s financial records are subject to independent external review.

## **BALANCING DAY-TO-DAY RESPONSIBILITIES**

Network leadership teams, like the leaders of other complex organizations, are faced with a daunting set of responsibilities. Over and above their responsibilities for program development and implementation, leadership teams are commonly responsible for funding, human resources, operations, recruitment, and a variety of other tasks.<sup>74</sup> Given the breadth of their responsibilities, improvement leaders can become fully occupied with the day-to-day requirements of running their enterprise. When leaders step back from the daily demands in order to reflect, learn from their ongoing work, and adjust the network’s overall direction, they are able to make more thoughtful decisions.

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The book *Leadership on the Line* uses the metaphor of a dance floor and a balcony to illustrate the importance of leaders taking an expansive perspective.<sup>75</sup> Even though a leader may spend some time on the ground dancing and participating in an event, they should make sure to “get on the balcony” that overlooks the dance floor so they can see a larger picture of what is going on. Because it can be difficult for leaders to zoom out and view their organizations with an expansive lens, especially when they are in the midst of a change initiative, one of the primary functions of analytic partners is to help leaders get on the balcony. Analysts can provide value by considering the improvement network holistically, keeping its broader goals front and center while considering the larger system factors that are influencing its work.

Just as getting caught up in the day-to-day can prevent a network’s leadership team from reflecting on the larger forces affecting its organization, it can also cause them to lose sight of their end goals. Therefore, another important function of an analytic partner is to help network practitioners stay accountable to their own goals. This can be done in at least two ways. First, analytic partners can serve as the “empirical conscience” of a network by focusing members on the hypothesized causal connections in their working theory of improvement. Are positive changes taking place? If so, are the expected causal linkages happening? The network has introduced practices that they hypothesize will improve certain processes and in turn enhance some specific outcomes. Is this sequence occurring as expected?

Second, analysts can reach beyond these empirical questions and prompt broader reflective discussions

around questions such as *To what extent are we accomplishing what we set out to do?* or *To what extent are our actions aligned with our purposes?* These types of questions aim to promote internal accountability<sup>76</sup> and help network practitioners stay true to their core objectives and values.

## **RISKY, VULNERABLE, UNCERTAIN WORK**

Members of improvement networks are often trying to make progress on multifaceted social problems with a solution path that is far from clear. In such situations, humility, openness, and adaptability are valuable assets. Practitioners in improvement networks are constantly trying out new approaches that may or may not work in the hopes that they will learn quickly from failure. Unfortunately, working with traditionally trained evaluators may not be a good fit for this learning-by-doing mindset. Indeed, commonly “fear of failure pervades evaluation” because evaluations emphasize the performance of a program above all.<sup>77</sup>

As a consequence, the evidence being generated by analytic partners and the way that they share that evidence plays a central role in helping improvement practitioners learn from their work. In these inherently vulnerable situations, it is important that practitioners and analysts develop trusting relationships. Trust eases communication. It creates a sense of safety that encourages network members to react to failures with curiosity instead of defensiveness.<sup>78</sup> Analytic partners can promote trust by engaging in long-term, collaborative relationships; acting with integrity (e.g., following through on commitments); and demonstrating personal regard for their clients,<sup>79</sup> among other means.

**Trust eases communication. It creates a sense of safety that encourages network members to react to failures with curiosity instead of defensiveness.**

Table 2 summarizes how an analytic partner can engage the working conditions of a network leadership team. Taken together with Table 1, it serves as a summary of the integrated EFI approach. These tables connect the needs of networks and network leaders to specific analytic activities and ways of working together that may meet these needs. Our intention here is to provide a set of ideas, not a guidebook or checklist. Any particular analytic partner will selectively draw on these ideas based on their own expertise, their assessment of network’s needs, and the developmental stage the network is in. For the sake of brevity, we do not elaborate on the specific analytic tools that partners might use, though more detail on a select list of tools is available in the appendix.

In sum, as analytic partners engage in EFI activities, their orientation toward their work is goal-aligned with the network they are supporting. They draw on a diverse set of tools and methods to inform the network’s efforts to achieve its aims, with a stake in its success and shared accountability for its results. They best advance the network’s outcomes by conducting the most responsive and thoughtful disciplined inquiry that they can. This type of goal-aligned role is distinct from the traditional evaluator, whose primary

responsibility is often to the funder and not the grantee. In this way, taking an EFI approach dissolves the tension that often exists between an evaluator and the program staff they are evaluating. Evaluation now is not about the program and its staff but rather for the program and its staff to assist them in advancing their goals. Therefore, the analytic partner and the improvement practitioner should be unambiguously and unabashedly on the same team.

**Taking an EFI approach dissolves the tension that often exists between an evaluator and the program staff they are evaluating.**

**Table 2: How Could Analytic Partners Support Network Leadership Teams?**

Improvement leadership teams ...	So they need ...
Face a learning imperative Help their organization learn quickly from its efforts in order to rapidly improve	Analytic partners that are embedded in the leadership team, regularly available, and capable of providing rapid feedback
Can be consumed with the day-to-day responsibilities of their work	Time to reflect and “get on the balcony”* Help to stay focused on their end goal and stay internally accountable to it
Are engaging in fundamentally challenging, risky work in which they need the space to be vulnerable and make mistakes	Analytic partners that emphasize an ongoing, trusting professional relationship

\* Heifetz, R., & Linsky, M. (2002). A Survival Guide for Leaders. *Harvard Business Review*, 80(6), 65–74.

# THE DISPOSITIONS, SKILLS, AND KNOWLEDGE NEEDED TO DO THIS WORK

This white paper has outlined a framework for how analytic support can assist in advancing network efforts toward improvements at scale. This section will address some of the dispositions, skills, and knowledge demands on analytic partners to execute well in this role. This analytic work requires a wide variety of competencies, so the description that follows is not that of a single person, but rather of the technical and social competencies required of analytic partners more generally. Importantly, efforts to apply the EFI framework are still in their infancy, and much still needs to be learned about how to execute it well in different settings. Though the characteristics described in this section begin to clarify what is required for this work, they should be viewed as provisional and incomplete.

## **DISPOSITIONS**

As previously argued, analysts should fully engage with improvement practitioners and serve as authentic partners in the work of achieving the improvement aim.<sup>80</sup> Being effective in this role likely requires an embrace of humility and a collaborative mindset. While the analytic partner may bring distinct methods and skills to the network hub, they are not the knowledge authority. By their very nature, improvement networks bring together members with distinctive and varied experiences and expertise. Because analytic partners join this diverse collegueship as full members, they are true partners. In their roles, they need clarity in what they know and don't know, and what they can and cannot bring to the enterprise, while also remaining open and vulnerable to learning through the work. Like network leaders, they should be comfortable with ambiguity. As part of the network leadership team, analytic partners will need to learn their way into how best to support the network's improvement efforts.

**Knowing when to call attention to problematic program developments and how to frame these comments requires the analyst to exhibit judgement, tact, and social sensitivity.**

## **SKILLS**

An EFI orientation makes demands on both technical and social-interpersonal skills. As a critical friend, one of the essential tasks of an analytic partner is to raise questions and bring evidence to bear in their discussion. Knowing when to call attention to problematic program developments and how to frame these comments requires the analyst to exhibit judgement, tact, and social sensitivity.<sup>81</sup> The ability to build relationships and sustain rapport with others over an extended period of time is also essential in partnering with an organization. Additionally, facilitation skills will likely be highly important because a key task of using evidence for improvement is to help groups make sense of data and evidence.<sup>82</sup>

At the technical level, an EFI orientation requires methodological versatility and flexibility. The process of helping a network refine and test its working theory of improvement emphasizes a strong background in traditional social-science research methodology. Knowledge of measurement development may be particularly important, with an emphasis on

developing practical measures that are minimally intrusive while still predictive of targeted outcomes.<sup>83</sup> To help a network test their theory, analysts will likely be well served by a grounding in inferential statistics and correlational and quasi-experimental methods. These tools allow network members to identify associations between the activities they pursue, the mechanisms for improvement assumed, and the outcomes to which they aspire. Beyond these quantitative skills, an analytic partner will also likely require qualitative and mixed-method research skills such as interviewing, ethnographic observation, and survey development. These methods are valuable during the early stage of network formation in deepening understandings about the problems to be solved and the system forces shaping them. They are also likely to be called upon to help a network understand its expanding enterprise and its broader ecological context.

## **KNOWLEDGE**

Analytic partners are also best positioned to provide value when they bring relevant content expertise to their work. Such expertise lends credibility and helps analytic partners to ask better questions about the work of the improvement enterprise and to see important connections. In the context of improvement networks, multiple forms of content expertise may be important. First, knowledge of improvement methodologies, such as design thinking and improvement science, is essential. Knowledge of improvement science, for example, entails familiarity with the tools outlined in classic texts on improvement thinking<sup>84</sup> and an understanding of the experimental, learning mindset practitioners aim to adopt in order to use improvement tools at their full potential.

Second, knowledge of a network's specific problem of practice and context will likely also be beneficial. Such knowledge demands will differ substantially based on the particular focus of the network (e.g., early grades literacy, middle-school mathematics, etc.). Beyond content expertise, training in systems thinking and its associated tools (systems maps, process maps), skill in the analytics of variation in performance, and a general knowledge of educational organizations (e.g., schools, districts) may be very helpful for an analyst trying to understand how a network interacts with its contexts.<sup>85</sup>

**Training in systems thinking and its associated tools, skill in the analytics of variation in performance, and a general knowledge of educational organizations may be very helpful for an analyst trying to understand how a network interacts with its contexts.**

# CONCLUSION

In this paper, we have introduced the role of an analytic partner in an improvement network and described how an evidence for improvement framework can productively guide their work. At the center of the framework are ongoing systematic inquiries that inform the network as it iterates through its working theory of improvement. Drawing on writings about how a scientific professional learning community develops among network members,<sup>86</sup> the EFI framework also highlights the importance of analyzing the social connections and collaborative norms emerging in the improvement enterprise. Finally, the EFI framework pushes analytic partners to reckon with the environmental contexts in which improvement efforts are embedded.

The approach presented here builds on a rich practice of evaluation techniques developed over the last 50 years. It draws selectively from these traditions to craft a coherent and integrated framework that can guide future evaluative efforts for continuous

improvement networks. We see the primary contribution of this paper as making more visible the connections between (1) longstanding practices in program evaluation and (2) the gathering and use of evidence for continuous improvement carried out through structured networks. In so doing, we hope to spark interest and scholarship around such efforts in the educational field.

We encourage future research and writing to examine and investigate the usefulness of the practices we propose here so that they can be refined and better understanding of how working analysts might use them can be developed. It is only through such inquiry that we as a field can advance our understanding of how to best support networks as they engage in the challenging work of continuous learning and improvement.

# APPENDIX: AN EMERGING TOOLKIT FOR EFI

This section identifies a preliminary set of tools that analytic partners might use to support improvement networks, within the context of the three-level analytic model. Figure A-1 lists the tools that are briefly described.

**Figure A-1: Tools That Can Support Improvement Networks**

<p><b>WORKING THEORY OF IMPROVEMENT (LEVEL 1)</b></p>	<ol style="list-style-type: none"> <li>1. Enhancing hub capacity for inquiry               <ol style="list-style-type: none"> <li>a. Empathy interviews</li> <li>b. Systems maps</li> <li>c. PDSAs</li> </ol> </li> <li>2. Theory and measurement development</li> <li>3. Analytic infrastructure capacity building</li> <li>4. Analytic audits</li> </ol>
<p><b>IMPROVEMENT ENTERPRISE (LEVEL 2)</b></p>	<ol style="list-style-type: none"> <li>5. Network health assessments</li> </ol>
<p><b>ENVIRONMENTAL CONTEXTS (LEVEL 3)</b></p>	<ol style="list-style-type: none"> <li>6. Environmental scans</li> </ol>
<p><b>OVERALL (LEVELS 1, 2, &amp; 3)</b></p>	<ol style="list-style-type: none"> <li>7. Improvement reviews</li> </ol>

## THE WORKING THEORY OF IMPROVEMENT

### ENHANCING HUB CAPACITY FOR INQUIRY

Network leadership teams commonly engage in inquiry to understand the systems in which they work and the interventions they develop. By nature of their training, analytic partners may be well positioned to help build a leadership team’s capacity for productive inquiry. Three tools that network leadership teams and analytic partners may draw on are empathy interviews, systems maps, and PDSA cycles.

**Empathy interviews** offer a strong tool for gaining knowledge from end-users. This technique is adapted from the field of user-centered design,<sup>87</sup> and it focuses on understanding people’s thoughts, emotions, and needs in an effort to determine which interventions are best suited to them and their contexts. **Systems maps**, in turn, describe the subsystems most likely to manifest themselves in the improvement work itself.<sup>88</sup> While members of a network may know aspects of the system in which they work or learn, often individuals struggle to see a system in its (approximate) entirety. The **PDSA cycle** provides improvement practitioners with a systematic and rigorous way of studying the changes being implemented. PDSAs vary in scale and scope, but all require practitioners to propose hypotheses (plan); attempt and document a change (do); assess the results (study); and make decisions about how and whether to revise, adopt, or abandon that change (act).<sup>89</sup>

Analytic partners often have skills and knowledge useful in supporting hub teams in each of these three tools. Analytic partners with training in qualitative research methods can assist members of a network in formulating questions for users and analyzing the data collected. Similarly, an analytic partner may be well-suited to help network members develop a systems map so that the network is better able to identify the components in their system. Finally, improvement practitioners may need help in applying the precise, scientific thinking that a PDSA requires to their complex daily work.

## **THEORY AND MEASUREMENT DEVELOPMENT**

At their core, continuous improvement efforts are driven by theory-based learning. Participants articulate a theory of improvement that connects specific ideas in an extended causal chain that ultimately targets valued outcomes. They then create a set of measures that allows them to make inferences about these hypothesized causal linkages. When done well, a disciplined approach to theory-based inquiry can give practitioners confidence that their specific practices are moving them towards their aim. By the same token, such an approach can challenge practitioners, convince them that their practices are not working, and thus spur important revisions. However, constructing a set of measures tied to a theory of improvement and testing the linkages between these measures is no simple task.

In our experience, practitioners engaging in improvement often have trouble with this component of the work—especially when they are beginning their efforts. Therefore, one potentially valuable activity

for an analytic partner is to support measurement development. The purpose of such support is to investigate and help refine (1) the measures that an improvement effort is using to assess its theory and (2) the techniques the effort is using to make inferences based on those measures. Of primary importance, an analytic partner might consider how to refine a network's measures so that they are practical for use in improvement efforts.<sup>90</sup>

## **ANALYTIC INFRASTRUCTURE CAPACITY-BUILDING**

Improvement networks seek to develop their own internal capacity to develop measures attached to their theories of improvement, assess the links between those measures, and revise their theories accordingly. In order to accomplish these tasks in an efficient manner, networks need an analytic infrastructure—that is, the roles, routines, and tools that allow a network to collect, manage, analyze, and interpret data efficiently. Commonly, improvement networks lack these resources, especially early on. Thus, analytic partners may choose to spend time providing training and tools to network members with the goal of helping sustain a high-functioning infrastructure. For example, an analyst may develop a data dashboard that displays all of a network's improvement measures in one location, provide a network with the software that was used to create that dashboard, and instruct network members in the use of that software. An analytic partner might also help the network study the social processes it uses to collect and manage data, identify bottlenecks and or redundancies, and assist in the design of a new process.

## **ANALYTIC AUDIT**

Beyond helping a network develop its own measures or working to build an analytics infrastructure, an analytic partner may provide a review and/or certification function for a network's testing, theory development, and outcome assessment processes. In an analytic audit, an analytic partner would assess the practicality and predictive power of a network's measurement system. He or she would also assess the nature by which a network had tested links between its activities and outcomes, and verify that any claims the network had made about the effects of its activities were supported by its data. Depending on the network's needs, an analytic partner might conduct the audit, or he/she might prepare the network for an audit conducted by an external group such as an evaluation firm or government body. Though it might provide valuable formative feedback to a network, the primary purpose of such an audit is outward facing. If an analytic partner and/or an external firm undertaking an audit could verify that the measurement system and testing strategy of a network was of high quality, it would provide that network with credibility in its broader environment.

## **THE IMPROVEMENT ENTERPRISE**

### **NETWORK HEALTH ASSESSMENT**

Networks are a distinct organizational form with unique advantages and disadvantages. Given the potential and the challenge of working through a network form, analytic partners can provide value by assessing network's health and sharing this assessment with network members. As described in the main body

of the paper in the section called "Establishing and managing an improvement enterprise," Carnegie has been developing a suite of network health assessments that identify key aspects of network functioning and help network leadership teams tailor their organizational design and communication strategies.

## **THE ENVIRONMENTAL CONTEXT**

### **ENVIRONMENTAL SCAN**

Environmental scanning is a common practice in business and healthcare in which organizations assess features of their environment (e.g., competitor's behavior, sector-level and global trends, policy changes), derive implications for their work, and respond strategically. Environmental scanning allows organizations to identify factors that may act as barriers or facilitators of their work, help them anticipate changes occurring in the broader sector, and guide them towards actions that will be most effective in their contexts.<sup>91</sup> By using environmental scanning, analytic partners can help improvement networks adjust to the constraints in their environment, take advantage of facilitating opportunities, and/or work to change aspects of their environment that are challenging (e.g., by lobbying or political organizing).

## **OVERALL**

### **IMPROVEMENT REVIEWS**

An improvement review is a process by which an external group of experts performs a comprehensive assessment of an improvement network at a given point in time. The purpose of this review is to provide

an improvement effort with formative feedback and advice. Members of an improvement review panel may include improvement science experts, content area experts, and/or peers that work in other improvement networks. Importantly, an improvement review may cover all three levels of our nested model. During a review, panelists may discuss the network's working

theory of improvement and associated measures, the development and health an improvement enterprise, and how the effort is interacting with its local and regional contexts. An analytic partner can help arrange improvement reviews, participate as a member of an improvement review panel, and help a network leadership team make sense of the feedback that comes out of a review process.

## ENDNOTES

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